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WHAT IS CLAIMED:

1. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing region indicating signals indicating regions within images presented and motion requesting signals requesting viewpoint motion; the method comprising steps of:

presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the step of presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace;

receiving a first region indicating signal and a first motion requesting signal from the user input device; the first region indicating signal indicating a first region on the first surface; the first motion requesting signal requesting viewpoint motion relative to the first region; and

presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data relative to the first region on the first surface in accordance with the first motion requesting signal.

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2. The method of claim 1 in which the first region indicating signal indicates a point on the first surface.

3. The method of claim 1 in which the first viewpoint is perceptible as positioned at a first distance from the first region and the second viewpoint is perceptible as positioned at a second distance from the first region, the second distance being shorter than the first distance.

4. The method of claim 1 in which the first viewpoint is perceptible as positioned at a first distance from the first region and the second viewpoint is perceptible as positioned at a second distance from the first region, the second distance being longer than the first distance.

5. The method of claim 1 in which the first surface is perceptible as having a normal in the first region, the second viewpoint being closer to the normal than the first viewpoint.

6. The method of claim 5 in which the first viewpoint is perceptible as having a first direction of orientation and the second viewpoint is perceptible as having a second direction of orientation; the second direction of orientation being shifted toward the first region from the first direction of orientation.

7. The method of claim 6 in which the second viewpoint is perceptible as closer to the normal than the first viewpoint by an arc length and the second direction of orientation is perceptible as shifted by a shift angle from the

first direction of orientation; the shift angle being an angle subtended by the arc length.

8. The method of claim 6 in which the second direction of orientation is perceptible as shifted by a shift angle from the first direction of orientation; the second image being perceptible as having a center of view; the shift angle bringing the first region toward the center of view.

9. The method of claim 1 in which the first viewpoint is perceptible as having a first direction of orientation and the second viewpoint is perceptible as having a second direction of orientation; the second direction of orientation being shifted toward the first region from the first direction of orientation.

10. The method of claim 1, further comprising a step of receiving a second region indicating signal from the user input device; the second region indicating signal indicating a second region on the second surface, the second region being perceptible as a displaced continuation of the first region.

11. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing region indicating signals indicating regions within images presented on the display and motion requesting signals requesting viewpoint motion; the method comprising a sequence of steps, each step comprising substeps of:

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P1 presenting a respective image on the display; each respective image including a respective surface that is perceptible as being viewed from a respective viewpoint within a three-dimensional workspace; the substep of presenting the respective image comprising a substep of storing respective coordinate data indicating a position of the respective viewpoint in the three-dimensional workspace; and

P1 receiving a respective region indicating signal and a respective motion requesting signal from the user input device; each respective region indicating signal indicating a respective region on the respective surface; each respective motion requesting signal requesting viewpoint motion relative to the respective region;

P1 the sequence of steps including a first step and a number of following steps, each following step having a next preceding step; the respective surface of each following step being perceptible as a continuation of the respective surface of the next preceding step; the respective viewpoint of each following step being displaced from the position indicated by the respective coordinate data stored in the next preceding step relative to the respective region of the next preceding step in accordance with the respective motion requesting signal of the next preceding step.

3 12. The method of claim 11 in which each step's respective region indicating signal indicates a respective point on the respective surface.

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13. The method of claim 11 in which the respective viewpoint of each following step is displaced from the respective viewpoint of the next preceding step by a respective approach displacement toward the respective region of the next preceding step.

14. The method of claim 13 in which the respective approach displacements define an asymptotic path in the three-dimensional workspace.

15. The method of claim 13 in which the respective approach displacements follow a logarithmic function.

16. The method of claim 13 in which the respective viewpoint and region of each step are perceptible as positioned at a respective distance from each other; the respective approach displacement of each following step being a proportion of the respective distance of the next preceding step.

17. The method of claim 11 in which the respective viewpoint of each following step is displaced from the respective viewpoint of the next preceding step by a respective retreat displacement away from the respective region of the next preceding step.

18. The method of claim 17 in which the respective retreat displacements follow a logarithmic function.

19. The method of claim 17 in which the respective viewpoint and region of each step are perceptible as positioned at a respective distance from each

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other; the respective retreat displacement of each following step being a proportion of the respective distance of the next preceding step.

20. The method of claim 11 in which the respective surface of each step is perceptible as having a respective normal in the respective region; the respective viewpoint of each following step being displaced from the respective viewpoint of the next preceding step by a respective lateral displacement toward the respective normal of the next preceding step.

21. The method of claim 20 in which the respective lateral displacements define an asymptotic path in the three-dimensional workspace.

22. The method of claim 20 in which the respective lateral displacements follow a logarithmic function.

23. The method of claim 20 in which the respective normal of each step includes a respective lateral position point; the respective viewpoint and lateral position point of each following step being perceptible as positioned at a respective lateral distance from each other; the respective lateral displacement of each following step being a proportion of the respective lateral distance of the next preceding step.

24. The method of claim 11 in which the respective viewpoint of each step is perceptible as having a respective direction of orientation; the respective direction of orientation of each following step being shifted toward the respective region of the next preceding step from the respective direction of orientation of the next preceding step.

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25. The method of claim 11, in which each following step further comprises a substep of presenting within the respective image a shape positioned about the respective region of the next preceding step.

26. The method of claim 25 in which the shape is presented so that it is perceptible as being parallel to the respective surface at the respective region of the next preceding step.

27. The method of claim 11 in which the respective surface of each step is bounded; the respective motion requesting signal of the first step being a beginning motion requesting signal and the respective motion requesting signal of a second step that is one of the following steps being an ending motion requesting signal, the respective region of each step after the first step through the second step being constrained to stay within the bounded respective surface of the step.

28. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing motion requesting signals requesting viewpoint motion; the method comprising steps of:

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presenting a first image on the display; the first image including a first surface that is perceptible as being viewed from a first viewpoint within a three-dimensional workspace; the first surface including a first region; the first viewpoint being positioned at a first distance from the first region;

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receiving a first motion requesting signal requesting viewpoint motion from the user input device; and

presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace; the second viewpoint being displaced by a first displacement from the first viewpoint in accordance with the first motion requesting signal; the first displacement being a function of the first distance.

29. The method of claim 28 in which the first displacement is an approach displacement toward the first region.

30. The method of claim 28 in which the first displacement is a retreat displacement away from the first region.

31. The method of claim 28 in which the first displacement is a logarithmic function of the first distance.

32. The method of claim 28 in which the first displacement is a proportion of the first distance.

33. The method of claim 28 in which the first region includes a point, the first distance being a distance between the first viewpoint and the point.

34. The method of claim 28 in which the first surface is perceptible as having a normal in the first region, the first displacement being a lateral displacement toward the normal.

35. The method of claim 34 in which the first displacement is a proportion of a line between the first viewpoint and a normal point, the normal point being on the normal and at the first distance from the region.

36. The method of claim 35 in which the line is an arc.

37. The method of claim 35 in which the line is a chord.

38. The method of claim 34 in which the first viewpoint is perceptible as having a first direction of orientation and the second viewpoint is perceptible as having a second direction of orientation; the second direction of orientation being shifted toward the first region from the first direction of orientation.

39. The method of claim 34 in which the second viewpoint is perceptible as closer to the normal than the first viewpoint by an arc length and the second direction of orientation is perceptible as shifted by a shift angle from the first direction of orientation; the shift angle being an angle subtended by the arc length.

40. The method of claim 34 in which the second direction of orientation is perceptible as shifted by a shift angle from the first direction of orientation;

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the second image being perceptible as having a center of view; the shift angle bringing the first region toward the center of view.

41. The method of claim 28 in which the first viewpoint is perceptible as having a first direction of orientation and the second viewpoint is perceptible as having a second direction of orientation; the second direction of orientation being shifted toward the first region from the first direction of orientation.

42. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing motion requesting signals requesting viewpoint motion; the method comprising a sequence of steps, each step comprising substeps of:

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presenting a respective image on the display; each respective image including a respective surface that is perceptible as being viewed from a respective viewpoint within a three-dimensional workspace; each step's respective surface including a respective region; the respective viewpoint being positioned at a respective distance from the respective region; and

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receiving a respective motion requesting signal requesting viewpoint motion from the user input device; each respective motion requesting signal requesting viewpoint motion;

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the sequence of steps including a first step and a number of following steps, each following step having a next preceding step; the respective surface of

each following step being perceptible as a continuation of the respective surface of the next preceding step; the respective viewpoint of each following step being displaced by a respective displacement from the respective viewpoint of the next preceding step in accordance with the next preceding step's motion requesting signal; the respective displacement of each following step being a function of the respective distance of the next preceding step.

43. The method of claim 42 in which the respective surface of each step is perceptible as having a respective normal in the respective region; the respective displacement of each following step including a respective radial component that is a function of the respective distance of the next preceding step and a respective lateral component toward the respective normal of the next preceding step.

44. The method of claim 43 in which the respective radial component of each following step is a first proportion of the respective distance of the next preceding step; the respective radial component indicating a respective intermediate viewpoint; the respective normal of each step including a respective lateral position point; the respective intermediate viewpoint of each following step and the lateral position point of the next preceding step being perceptible as positioned at a respective lateral distance from each other; the respective lateral component of each following step being a second proportion of the respective lateral distance.

45. The method of claim 44 in which the second proportion is greater than the first proportion.

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46. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing motion requesting signals requesting viewpoint motion; the method comprising a sequence of steps, each step comprising substeps of:

presenting a respective image on the display; each respective image including a respective surface that is perceptible as being viewed from a respective viewpoint within a three-dimensional workspace; each step's respective surface including a respective region; the respective viewpoint being positioned at a respective distance from the respective region; and

receiving a respective motion requesting signal requesting viewpoint motion from the user input device; each respective motion requesting signal requesting viewpoint motion;

the sequence of steps including a first step and a number of following steps, each following step having a next preceding step; the respective surface of each following step being perceptible as a continuation of the respective surface of the next preceding step; the respective viewpoint of each following step being displaced by a respective displacement from the respective viewpoint of the next preceding step in accordance with the next preceding step's motion requesting signal;

the following steps including first and second following steps; the respective motion requesting signal of the next preceding step of the first following step

requesting motion toward the respective region of the next preceding step; the respective motion requesting signal of the next preceding step of the second following step requesting motion away from the respective region of the next preceding step; the respective displacement of the first following step including a first proportional component that is a first proportion of the respective distance of the next preceding step; the respective displacement of the second following step including a second proportional component that is a second proportion of the respective distance of the next preceding step.

47. The method of claim 46 in which the first following step is the next preceding step of the second following step, the second proportion and the first proportion being such that the first and second proportional components are equal in magnitude.

48. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing motion requesting signals requesting viewpoint motion; the method comprising a sequence of steps, each step comprising substeps of:

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presenting a respective image on the display; each respective image including a respective surface that is perceptible as being viewed from a respective viewpoint within a three-dimensional workspace; each step's respective surface including a respective region; the substep of presenting the respective image comprising a substep of storing respective coordinate data indicating a position of the respective viewpoint in the three-dimensional workspace; and

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receiving a respective motion requesting signal requesting viewpoint motion from the user input device; each respective motion requesting signal requesting viewpoint motion toward the respective region;

the sequence of steps including a first step and a number of following steps, each following step having a next preceding step; the respective surface of each following step being perceptible as a continuation of the respective surface of the next preceding step; the respective viewpoint of each following step being displaced by a respective displacement from the respective viewpoint of the next preceding step toward the respective region of the next preceding step; the respective displacement of each following step being a function of the position indicated by the next preceding step's respective coordinate data such that the respective displacements define an asymptotic path.

49. The method of claim 48 in which each step's respective region includes a respective point, the respective displacement of each following step being a function of a respective distance between the position indicated by the next preceding step's respective coordinate data and the next preceding step's respective point.

50. The method of claim 49 in which the respective displacement of each following step is a logarithmic function of the respective distance.

51. The method of claim 49 in which the respective displacement of each following step is a proportion of the respective distance.

52. A method of operating a system that includes a display, user input means for providing signals, and a processor connected for receiving signals from the user input means and for presenting images on the display; the user input means providing motion requesting signals; the motion requesting signals requesting viewpoint motion and point of interest motion; the user input means being structured so that the user can request viewpoint motion and point of interest motion independently; the method comprising steps of:

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presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first point of interest on the first surface; the step of presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace;

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receiving a first motion requesting signal set from the user input means, the first motion requesting signal set requesting a first viewpoint motion and a first point of interest motion; and

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in response to the first motion requesting signal, presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data in accordance with the first viewpoint motion; the second

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image including a second point of interest on the second surface, the second point of interest being displaced in accordance with the first point of interest motion.

53. The method of claim 52 in which the first and second surfaces are each bounded; the first and second points of interest being constrained to stay within the bounded first and second surfaces, respectively.

54. The method of claim 52 in which the first image further includes a first shape indicating the first point of interest and the second image further includes a second shape indicating the second point of interest, the second shape being perceptible as a moved continuation of the first shape.

55. The method of claim 52 in which the first viewpoint motion includes radial motion, the second viewpoint being displaced radially along a ray extending from the second point of interest through the first viewpoint.

56. The method of claim 55 in which the second viewpoint is displaced radially toward the second point of interest.

57. The method of claim 55 in which the second viewpoint is displaced radially away from the second point of interest.

58. The method of claim 52 in which the second surface is perceptible as having a normal at the second point of interest, the first viewpoint motion including lateral motion, the second viewpoint being displaced laterally toward the normal.

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59. A system comprising:

a display;

user input means for providing signals; and

a processor connected for receiving signals from the user input means and for presenting images on the display; the processor having memory;

the user input means providing motion requesting signals requesting viewpoint motion and point of interest motion; the user input means being structured so that the user can request viewpoint motion and point of interest motion independently;

the processor comprising first means for presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first point of interest on the first surface; the first means further storing viewpoint coordinate data in memory, the viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace;

the processor further comprising second means for receiving a first motion requesting signal set from the user input means, the first motion requesting signal set requesting a first viewpoint motion and a first point of interest motion;

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the processor further comprising third means for responding to the first motion requesting signal set by presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data in accordance with the first viewpoint motion; the second image including a second point of interest on the second surface, the second point of interest being displaced in accordance with the first point of interest motion.

60. The system of claim 59 in which the the user input means comprises a mouse, the user requesting point of interest motion by operating the mouse, the first motion requesting signal set including data indicating mouse operation.

61. The system of claim 59 in which the user input means comprises a keyboard, the user requesting viewpoint motion by operating the keyboard, the first motion requesting signal set including data indicating keyboard operation.

62. The system of claim 61 in which the user requests viewpoint motion relative to the second point of interest, the keyboard having a first key and a second key, the user operating the first key to request motion toward the second point of interest, the user operating the second key to request motion away from the second point of interest.

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